ICS 43.140
CCS Y 14

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 36944-2026

Replacing GB/T 36944-2018

General technical specification for electric bicycle chargers

电动自行车用充电器通用技术规范

Issued on: May 25, 2026 **Implemented on: December 1, 2026**

Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC

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5 General Requirements

The charger should comply with the requirements of GB 42296.

6 Requirements

6.1 Appearance The charger surface should be flat, free from obvious dents, burrs, scratches, deformation, and other mechanical damage; the external cord should be intact and undamaged; the surface coating should be... The plating should be uniform and without peeling; components should be securely fastened and free from defects and damage such as rust, burrs, and cracks; metal parts should be free from rust; all numerals... All signs, logos, and decals should be complete, installed upright and securely, with clear lettering and correct positioning.

6.2 Charging Parameters

6.2.1 Starting charging voltage The initial charging voltage should not be lower than 50% of the rated voltage of the compatible battery pack.

6.2.2 Output Voltage/Current

6.2.2.1 The deviation between the measured maximum output voltage of the charger and its stated maximum output voltage should be within ±1%.

6.2.2.2 For lead-acid batteries, the primary charger should have temperature compensation functionality, and the maximum output voltage should be able to adjust according to the ambient temperature. Adaptive adjustment. the difference between the highest output voltage values measured at 0°C and 40°C should be greater than 2.0V; this is not required for a two-stage charger. Function.

Note. See Appendix A for temperature compensation for lead-acid battery chargers.

6.2.2.3 For lithium or sodium-ion batteries, the primary charger should have temperature compensation functionality, and the rated output current should be able to adjust according to the ambient temperature. Adaptive adjustments should be made; the rated output current at 40°C should not be less than twice the rated output current at 0°C. This is not required for secondary chargers. Function.

6.2.3 Work Efficiency A wired charger operating at its rated output current should have an efficiency of no less than 85%. Wireless chargers should operate at their rated output current and their efficiency should not be less than 80%.

6.2.4 Ripple Coefficient The output ripple of a wired charger should not exceed 1% of its maximum output voltage. The peak ripple factor of a wireless charger should not exceed 5% in the high-voltage charging area.

6.2.5 Reverse Current The reverse current of a wired charger should not exceed 2mA.

6.3 Noise When tested according to the method described in 7.3, the operating noise of the charger should not exceed 60 dB(A).

6.4 Salt spray resistance After testing according to the method described in 7.4, the charger's plastic casing should be free from cracks and deformation; it should function normally; and its insulation resistance value should be greater than [value missing]. Or equal to 5MOmega.

6.5 Immunity

6.5.1 Electrostatic Discharge After testing according to the method described in 7.5.1, the charger shall meet the requirements of performance criterion B in Chapter 6 of GB/T 4343.2-2020.

6.5.2 Electrical Fast Transients After testing according to the method described in 7.5.2, the charger shall meet the requirements of performance criterion B in Chapter 6 of GB/T 4343.2-2020.

6.5.3 Injected Current After testing according to the method described in 7.5.3, the charger shall meet the requirements of performance criterion A in Chapter 6 of GB/T 4343.2-2020.

6.5.4 Radio Frequency Electromagnetic Field Radiation After testing according to the method described in 7.5.4, the charger shall meet the requirements of performance criterion A in Chapter 6 of GB/T 4343.2-2020.

6.5.5 Surge After testing according to the method described in 7.5.5, the charger shall meet the requirements of performance criterion B in Chapter 6 of GB/T 4343.2-2020.

6.5.6 Voltage Sag After testing according to the method described in 7.5.6, the charger shall meet the requirements of performance criterion C in Chapter 6 of GB/T 4343.2-2020.

6.6 Wired Charger

6.6.1 Output interface of lead-acid battery charger The output interface of the lead-acid battery charger is shown in Figure 2.

6.6.2 Lithium-ion battery charger output interface The output interface of the lithium-ion battery charger is shown in Figure 3.

6.6.3 Temperature Change After being tested according to the method described in 7.6.3, the charger should function normally and the insulation resistance value should be greater than or equal to 5MOmega.

6.6.4 Plug insertion and removal fatigue test After testing according to the method described in 7.6.4, the contact resistance of the charger should not exceed 10mOmega.

6.6.5 Minimum Cross-sectional Area of Conductor The charger shall be tested according to the method described in

7.6.5 and shall comply with the requirements of GB 42296.

6.6.6 Communication

6.6.6.1 General Rules The charger communicates with the battery through its output circuit. The communication system should have functions such as fault identification, transmission, and fault reporting.

6.6.6.2 Identification Phase The charger should have the function of sending a charging identification request to the battery. Upon receiving the charging identification request from the charger, the battery should then process the identified information. The system matches and judges the communication messages sent during the process. If the match is correct, charging proceeds normally; if the match fails 3 times in a row or within 30 seconds, charging stops.

6.7.1 Human Safety

6.7.1.1 Location of Anthropometric Points Select the locations of the human body measurement points as shown in Figure

4.The test limits should meet the requirements of Table 2.

6.7.2 Charging Power and Frequency Low-power wireless chargers should not exceed 80W in power and should operate at frequencies between 100kHz and 148.5kHz or 6765kHz. The operating frequency should be within the range of 6795kHz and 13553kHz~13567kHz; the power of a high-power wireless charger should not exceed 22kW, and the operating frequency should be within the range of 6795kHz and 13553kHz~13567kHz. 79kHz~90kHz; the error range of charging power should be within ±10%.

6.7.1.1 Human Body Measurement Points. And

6.7.1.2 Test the position of the vehicle body measurement points and record the results.

7.7.2 Charging Power and Frequency Connect the power analyzer to the output of the wireless charger and record the output power of the wireless charger; bring the probe of the spectrum analyzer close to the wireless charger. The transmitting coil of the wired charger records the frequency value corresponding to the signal peak displayed on the spectrum analyzer.

6.7.3 Safety Performance

6.7.3.1 Input Overvoltage Protection Wireless chargers should have overvoltage protection. When the input voltage exceeds the overvoltage protection value, the wireless charger